DOCUMENT RESUME

ED 024 295 FL 001 009

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Developing a Strategy for Innovation.

Spons Agency- Office of Education (DHEW), Washington, D.C. Bureau of Elementary and Secondary Education.
Pub Date 10 Feb 68
Grant- OEG-3-6-000927-1969
Note- 13p.; Paper presented at a symposium on the Associated Staff Training Program for the American Educ Research Assn, Chicago, Ill., Feb 10, 1968.
EDRS Price MF-$0.25 HC-$0.75
Descriptors- *Consultants, *Curriculum Design, Curriculum Evaluation, Educational Objectives, Educational Psychology, Feedback, Inservice Education, Instructional Improvement, *Instructional Innovation, *Modern Languages, Problem Solving, School Involvement, School Personnel, *School Role, Second Language Learning, Teacher Role
Identifiers- FLICS, Foreign Language Innovative Curriculum Study

As part of the Foreign Language Innovative Curriculum Study, the Associated Staff Training Program is involved in curriculum design for the training of school innovative agents. These agents, called Instructional Systems Consultants, are trained to guide continuing, systematic innovations in the school. This first in a series of three papers gives considerable attention to the concept of innovation (systematic, progressive, cumulative change) and its relation to school systems. Reasons for centering such change in the school are advanced. Highlights of the problem-solving method of innovation which emphasizes feedback and evaluation, are presented. For additional information, see FL 001 028 and FL 000 915. (AF)

EDO 24295

Paper presented at a symposium on the Associated Staff Training Program for the American Educational Research Association in Chicago, 10 February 1968

Amer. Educ. Res. Assoc.
Chicago 2/10/68

Developing a Strategy for Innovation[1]

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Most of us have, at one time or another, been embarrassed by a small voice inquiring, "Where did I come from, Daddy?" Nearly as embarrassing is a similar question about a research and development project, two years after its inception.

Yet an attempt to answer that question briefly may reveal the sources and biases of our project. Associated Staff Training is one of four programs grouped under the acronym FLICS which stands for Foreign Language Innovative Curriculum Study. FLICS is a Title III, Office of Education project in association with the Ann Arbor, Michigan school system. From its founding FLICS showed an asymmetry that was unnerving to some of us: four of the five directors and their staffs were skilled in languages and language learning. Associated Staff Training was comprised of psychologists of varying types, all of whom had some experience in the area of learning (specifically in behavior modification or educational technology) and all of whom were deficient in a second language and even, as we may demonstrate today, somewhat defective in their first.

FL 001 009

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[1]The preparation of this paper was supported by USOE Grant 3-6-000927-1969 (FLICS Project).

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OFFICE OF EDUCATION

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Since we had an original (and continuing) naivete about the public school system and about techniques of teaching a second language, we were forced to search within our own field, to explore our own areas of expertise in order to discover what contribution we as psychologists might make to the project. I think we have come up with three candidates which we will talk about to you today.

We applied some basic principles of learning, common in psychology, to innovative strategies. We produced a rough behavioral analysis of educational innovation.

Secondly we transposed the research psychologist's experimental model to another milieu: the school itself.

Third we developed materials to teach some of the content of psychology to non-psychologists.

From psychology, then, we borrowed an interpretation, in terms of a theory or bias; we extrapolated a method; and we took specific content.

Let me start with the examination of innovation. At the outset we had the distinct impression that there had been scores of educational innovations and wondered why still more were being tolerated, much less encouraged. A study of the literature on educational innovation appeared in order. As we reviewed that literature, some generalizations developed.

The first was a pessimistic one. The history of educational innovation, as we read it, was dismal. It was marked by disappointment, disillusionment and despair both on the part of the innovators and those for whom the innovations were designed. Repeatedly, under quite different conditions, innovations were introduced only to fail a short time later. Those that had not failed were, almost without exception, not evaluated. A logical conclusion would be that these had succeeded for reasons which often had little to do with their worth, in terms of instructional effectiveness.

Secondly, we came away from our study of innovation with the distinct impression that the school was, at best, an unhappy recipient of innovations and, at worst, a highly conservative bureaucracy, resistant to change and "intensely" passive. Innovation was, for the most part, a linear system: changes began in Schools of Education, in curriculum development projects, or in special demonstration programs and flowed to the school. The line stopped at the school, sometimes inside and sometimes outside the front doors.

Finally, as we examined case histories of innovations in education we found that they commonly fell into three or four categories. Many innovations consisted of materials produced outside of the school and unceremoniously imposed upon it with a minimum amount of preparation of the system, especially of the

teachers. Experts usually were drawn together to prepare books, slides, films and the like. Occasionally, but rarely, they also prepared teachers' manuals. Then the materials were left on the school's doorstep. Often the infant innovation died out in the cold; sometimes he was taken indoors but, with nothing analogous to Dr. Spock's book available, he failed to grow, adapt, mature, and generally prove useful.

A second set of innovations were demonstrational. The expert teacher or the advocate of a particular method or technique would <u>show</u> teachers, often captive audiences of teachers, how to perform. Occasionally, at great expense, teachers were given a chance to practice these new skills in workshops. Once again, though, the innovative method was imposed, ready-made, upon the system.

The third set of innovations consisted of making expertise available through specially trained people. Thus: an audio-visual expert or curriculum specialist would be placed next to, or occasionally in, the school.

Recognition of the poor batting average of educational innovation is widespread. The solutions that have been advanced almost inevitably can be reduced to statements such as: "the problem lies in poor communication;" "better dissemination is needed;" "teachers must be encouraged to be more receptive to innovation;" "an atmosphere of change should be established in

the school." The first thing that strikes a learning psychologist is that the means of developing and of obtaining support for and adoption of instructional innovation do not echo the techniques of behavior change represented by many of the innovations themselves. (For example, programed instruction has been introduced into schools in ways which violate every principle of programing.) Efforts to change teachers' behaviors do not reflect the growing sophistication that we have with regard to changing students' behaviors.

Innovators expend great effort on the development of the innovation and then merely present it to the school. The naive assumption seems to be that the adopters of innovation are coldly rational men who objectively scan the offerings, study a few in great detail, then select, probably on the basis of data, the particular one most fitted to their needs. Now, the assumption of such behavior on the part of the recipient of innovation is not only unrealistic, but also were such behavior to exist, the remainder of the assumption is incorrect. For the most part innovations are not properly evaluated; therefore data are not available on which one could base a rational choice. Secondly, the decision to innovate or not to innovate seems to be in most cases unrelated to the demonstrated or assumed effectiveness of the innovation. Change seems to occur in the schools for many reasons; a relatively minor one is that the innovation exhibits

effectiveness in producing intended behavioral change.

It is not enough for the innovator to exhibit his wares in the educational marketplace and depend upon the discriminating powers of the consumer. Even a proposed "Consumer's Report" for educational products, an idea repeatedly bruited about in the last few years, would probably have little more effect on consumption than the existing Consumer's Reports have on buying, or, on the opposite side, the Surgeon General's report has had on smoking.

One could try to make an end run around this particular problem by developing innovations within the school. And as you will see, that is one thing we are trying to do.

Furthermore, when an innovation is adopted, regardless of why, it usually leads to troubles because sufficient provision has not been made for continuing support, for financing, and, most importantly, for training teachers in how to use and how to avoid misusing the innovation.

We have not time here to go into a detailed analysis of the teacher's behaviors with regard to innovation; it may be sufficient to say, in order to make a point, that the question of teacher acceptance and use of innovation boils down to this: Why should she change? Why should she adopt the innovation? What does it cost her and what does she gain? To rely upon the natural triumph of the goodness of the innovation over the teacher's, the students', and the school's existing sets of rewards and punishments is to foredoom effective innovation.

But rather than pursue this point further, let me move on, for the failure of innovation represents less of a serious problem than a second one we formulated as we read more and discussed innovations with teachers, administrators, social workers and other change agents.

Even if schools regularly accepted innovations; even if those innovations had been carefully evaluated; even if appropriate materials were provided for training teachers, the school system, and in particular the teacher, would always remain passive recipients. The school would still be the end of the line for innovation, in all the meanings of that phrase.

It seemed to us that the school itself must be brought into a dynamic role with regard to innovation. There are several reasons we can advance for this. I will mention three major ones.

It would seem that a system which is said to be devoted to developing in children problem-solving behaviors, creativity, and imagination should itself exhibit those activities. It should be a place in which exploration is a way of life, a place in which change is recognized as characteristic of life itself. From an instructional point of view, then, the educational institution should be a site of innovation.

A second reason for developing innovative activities in the school concerns changing teacher roles. To anyone who has spent years actively involved in the "new technology of education,"

assurances that the teacher is not threatened by technological advances sound hollow or even fraudulent. Educational technology, as represented by computer-assisted instruction, programed instruction, and educational systems analysis, does indeed challenge the teacher and, perhaps, the whole school system. But the threat is selective. To the extent that the teacher is an audio-visual device she is doomed by the development of more efficient and more sophisticated hardware. To the extent that she is a reinforcer dispenser on a random delivery schedule she is threatened today not only by theories of instruction and learning but by new approaches to child development and maturation. In an innovative system a teacher could pursue many other roles; she could help design, develop, try-out and evaluate large and small scale innovations. She could assume a more dignified and, I think, more rewarding position as manager of, and investigator of, student learning.

Then too, we felt that the school itself was a likely site for innovation because effective innovations are often complex and must be geared specifically to the needs of the particular site in which they are to be implemented. The local school, in order to make an innovation work, must spend an enormous amount of its resources adapting that innovation to its own needs, constraints, and strengths. Some of that energy might be spent in developing innovations which, in some senses, would be uniquely

adapted to a particular school site from their inception.

I should pause here for a moment to define what we mean by innovation. It is not merely newness or change. We mean systematic, progressive, cumulative change. It is perhaps a cliche that change must be cumulative and systematic in order for it to be progress. And progress, in turn, is defined, for us, as the production of better and better systems of instruction, big or small, which "expedite learning," to use B. F. Skinner's phrase.

Beginning with a learning theorist's analysis of innovative strategy we moved to a goal which could be stated this way: An attempt to develop and implement a dynamic system which could be introduced into and would be maintained by the schools. The system would involve existing personnel in the development of better instruction. We would design a means for innovating, a method for improvement, rather than a method of teaching or a set of materials. We would attempt to introduce into the school a way of continuing effective innovation rather than a particular innovation.

The lines along which the project was to develop were indicated by a close look at the existing needs. If there was one thing about the school that characterized all that we read, heard, and knew from personal experience, it was this: the school was a treasury of daily and continuing problems of all sorts, problems that ranged from an unruly child in study hall, through a group

of slow learners in a literature section, and the development of teaching materials for a course in second language learning, to the design and implementation of a whole curriculum. It appeared to us that the school was a world of problems. But then so was our own research world. What we do, as researchers, is to spend a great deal of time defining a problem, making it explicit, stating it precisely. Then, we arrange things so that we can test out one of several hunches. Testing out involves setting up feedback channels, ways in which the activities of the matter undergoing testing can report on changes in its state. Then we sort and arrange the findings, study them and conclude that we have obtained verification for, or a denial of, our hunch.

It seemed appropriate to project the broad strokes of this strategy--a problem-solving strategy, if you will--upon the school system. We did so.

The problem-solving routine and the method for innovating have become one in our thinking. Innovations flow naturally from such a routine. In a minute or two Roger Scott will describe and illustrate this routine for you. Let me preview it by noting some of its highlights.

(a) It allows for the clarification and explication of problems. Our experience with teachers at all levels of instruction has convinced us that, for the most part, the first statement of an instructional or discipline problem is not an accurate one

and is almost never a precise or testable one. Thus, solutions are often offered for inexact problems and the inexactness of the problem statement precludes evaluation of the effectiveness of the solution.

(b) It is designed to provide for the careful examination of all solutions offered whether they are generated from outside or from inside the classroom. It stresses evaluation before acceptance.

(c) It emphasizes the development of feedback networks so that the teacher's behavior can be guided and monitored. Like the linear model previously described for innovation in which innovation ended at the school, the teacher's behavior often has been a broadcast without appropriate feedback routines to indicate whether anyone is listening. Only the very best teachers can, under these circumstances of minimal feedback, improve and grow.

(d) The problem-solving routine provides the occasion for the teacher to engage in a number of skills outside of those that have been traditionally hers. Thus, she engages in explicating instructional problems, suggesting evaluative techniques, designing and executing solutions for problems, and adapting and adjusting particular solutions to individual students. (Many teachers today do some or all of these things but almost always unsystematically and in isolation.)

(e) In general the problem solving routine makes practicable the adjustment of the school to the individual learner.

(f) The problem solving routine provides the school with the opportunity to do exploratory studies. The school today rarely engages in uncommitted tryouts of solutions; too often it must gear-up at great expense both in terms of money and of the morale of the staff, when an innovation is introduced. The commitment to the innovation at that point is so great that it cannot be fairly evaluated.

The problem solving routine is personified by our trainee, the person we have named the instructional systems consultant: ISC. She will be the guide as teachers figuratively walk through the routine. "Routine" sounds like a cold and inhuman word. The ISC will humanize it. She will be attached to a school, and at least a part time resident in it. (She will also have attachments to extra-school groups such as research centers.) We see her as being approached voluntarily by teachers with problems and cooperatively engaging with the teachers in the explication and solution of those problems. The ISC will lead the teacher through the various steps of problem explication, selection and development of tentative solutions, testing and evaluation of these solutions and final implementation of demonstrably effective innovations.

Out of the routine has fallen, in a way analogous to factor analysis, the curriculum for training. Mr. Chapman will describe

the curriculum areas that have been distilled from the routine and the empirical processes by which the instructional units of this curriculum are being developed and evaluated.

In closing, let me summarize: The Associated Staff Training Project at FLICS is engaged in designing a curriculum to train innovative agents, termed Instructional Systems Consultants, who will be placed in schools to guide continuing, systematic innovations there and to help make the school the generator as well as a recipient of innovation. The project aims include the development, through the cooperative efforts of the ISC and the teacher, of a new teacher role so that she becomes the manager instead of merely the medium of instruction.